Weekly Memorials FOR THE INGENIOUS:

OR,

An Account of Books, with other curious Novelties,

Munday, *January* 30. 168½.

From the Journal *Des Scavans*, ſet forth *Dec.* 8, 1681.

Eſſays de Phyſique, ou Memoires pour ſervir a la Science des Choſes Naturelles. 4e. *Eſſay de la Nature des Colours, par* M. Mariotte *de l'Academie R. des Sciences.* In 12° *à Paris*, 1681.

ALL the *Colours* that appear to our eyes are reduc'd to Two kinds: For either they are called onely *ſeeming*, as thoſe of the *Rainbow*, of *Parelia's*, &c. or elſe *fix'd* and *permanent*, as thoſe that appear in the flame of a Candle, in the Feathers of Birds, in Stuffs, in Flowers, *&c.* M. *Mariotte* treats of both in the Two Parts of this *Eſſay*; and by a great many Experiments, endeavours to make known whence they proceed, and to ſhew the particular Cauſes of their Diverſities and Changes.

As the *Colours* of the firſt kind cannot be attributed, but to the different modifications which Refractions give to the light in the incurvations it receives in paſſing through tranſparent Bodies; ſuch as glaſs *Priſms*, the Air, the Water, *&c.* This *Author* begins his Book with ſome Suppoſitions, which ſerve as an Introduction to all his *Experiments*; and occaſionally draws general *Rules* and *Conſequences*,

which explain and admirably enlighten this matter: As for Example:

He ſays it may be held for certain, that the *Red* and the *Yellow* appear always towards the extreams of the *Convexities* of the *Incurvations*; and the *Blue* and the *Violet*, towards the extreams of the *Concavities:* whether the *Ray* be broken from the Air in Water, or in Glaſs; or from Glaſs or Water in the Air. That the *ſecond Refractions* which do not change the ſcituation of the parts, augment the vivacity of Colours; and that if they are contrary to the *firſt*, the Colours grow weak, and are chang'd into others, or are wholly loſt.

He explicates the *Red* and the *Violet*, which appear in *Priſms*, by the grand divergings that the colour'd *Rays* make, which are as it were driven forth and diſperſt by the interiour parts of the ſolid *Ray*, after the ſame manner as the exteriour parts of a *Jet d'Eau*, that is, an upright caſt of Water from a Pipe, are driv'n off and diſpers'd by the interiour; notwithſtanding that at the iſſue from the even Orifice, they have one and the ſame direction. He proves this *Hypotheſis* of the diverging of little *Rays*, by a great many Experiments: after which, he refutes the *Hypotheſes* which *Deſcartes*, *Newton*, and the *F F. Grimaldi* and *Deſchales* make uſe of for rendring a reaſon of the diverſity and change of Colours. He ſays that the firſt of theſe *Hypotheſes*, without ground, is founded on the motions which it ſuppoſes to divers parts of light; whereof it will have the quickeſt turnings to make appear the *Red* and the *Yellow*, and the leſs quick the *Blue* and the *Violet*. That there are many Experiments which ſeem to favour that of Learned *Newton*, who ſuppoſes that the *Rays* of the *Sun* have of themſelves different Colours, *viz. Red*, *Yellow*, *Green*, *Blue*, and *Violet*, which they always retain: but it being evident by an Experiment which he brings, that one and the ſame part of Light receives different colours by different modifications, it ought not to be received. And that the laſt which makes *Colours* proceed from the *Rarefaction* or *Condenſation* of light; that is to ſay, that light a little dilated makes

makes the *Red* and the *Yellow*; and that the ſame much more dilated, makes the *Blue* and the *Violet*, cannot ſubſiſt; becauſe at whatſoever diſtance a *red light* is received, it continues always *red*; and nevertheleſs this is much more dilated at a diſtance of 200 foot, than that which makes the *violet* is at a diſtance of five or ſix.

To avoid being imbroyl'd in the like difficulties, he contents himſelf, inſtead of eſtabliſhing any *Hypotheſis*, to give *eight Principles* of Experiments, that may be reconcil'd to all ſorts of obſervations. After which he comes to the explication of the principal appearances of theſe colours, caus'd by *refraction*, to which he applies theſe principles. He explains in the ninth appearance, how Glaſs cut in little Squares, *&c.* the *Feathers* of Birds, the *Hair*, and the *hairs* of the Eye-lids, make divers colours appear in luminous, or ſtrongly illuminated Objects. But not to ſpeak of the others, he ſays that the colours which appear in *Diamonds* cut in Squares, proceed from the reflection of ſome *Rays* of light, which having penetrated the *Diamond*, be it directly, or in breaking themſelves, reflect themſelves on theſe laſt ſurfaces, and in paſſing forth to the Air, make ſome other refractions, which give them different colours as though they had paſſed through a *Priſm*.

But becauſe of all the *appearances*, the *Rain bow* and the *Parelia's* are the moſt conſiderable, he is very large upon them. He examines the opinion of *John Fleiſher* of *Breſlaw* in *Sileſia*, who explicates the colours of the *Rain-bow* by the *refraction* and by the *reflection* of the *Rays* of the Sun on two drops of Water. That of *Antony de Dominis* an *Italian*, who explicates the interiour Rain-bow by two Refractions and one Reflection in one and the ſame drop. And finally, that of *Deſcartes*, who explicates the interiour Rain-bow, as the *Italian*, and the exteriour by two Refractions and two Reflections on one and the ſame drop of Water. He ſhews the difficulties incident to all theſe *Opinions*: After which, he propoſes his *own*, which he demonſtrates and explains with many Figures. But ſince it would be too long to relate it, we ſhall content our ſelves

to ſay, that he proves that the Colours are not produc'd in the interiour Rain-bow, but by the Rays which fall from about the 70 degree to the 48 d. 30 m. He explicates afterwards the neceſſity of the plurality of the ranks of Colours that are there ſeen, with their order. And finally, he explains how the exteriour *Rain-bow* is made by the *Rays* of the Sun which come to the eye after two *Refractions* and two *Reflections* in one and the ſame drop of Water: And ſhews that it is neceſſary that the *Parallel rays* which fall on the drop of Water very neer each other, become *parallel* in their firſt *Reflection*, to make Colours after their ſecond *Refraction*; and that this happens but to thoſe Rays which fall neer towards the 72 degree; and that thoſe which fall towards the 60 and towards the 80 are not proper.

He ſays, that the *Rain-bows* without colours are formed in *Miſts*, as the others are in *Rain*. He aſſures us to have ſeen of them three ſeveral times, as well in the Morning after the riſing of the Sun, as in the Night by the Moon; and he attributes this want of colours to the ſubtleneſs of the imperceptible Vapours which compoſe Miſts.

His *Hypotheſis* for rendring a reaſon of the little *Rings* about the Stars (which is more difficult to explicate than the *Rain-bow*, becauſe of the little certitude of the matter which produces them) is, that thoſe which have but one range of Colours, are made in the watery *Vapours* which compoſe the *Clouds*. That the others which have *two*, ſuch as are ſeen ſometimes about the *Moon*, are produc'd by little flat parcels of *Snow* that are in the Clouds; which work the like effect, in reference to the Order of Colours, as the little drops of Water, but having Colours more beautiful. That the great Circles which are ſeen about the *Sun* and *Moon*, are caus'd by little Threads of *Snow* indifferently tranſparent, having the figure of an *equilateral triangular Priſm*: And that finally, *Parelia's* are made by little *Priſms* very tranſparent and perpendicular, which are often found amongſt the little *equilateral Priſms* that make the great Circles.

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The Author of the Journal refers the Account of the Second Part of this curious Eſſay to another Journal; which I may alſo give you in one of the following Memorials.

Gerardi Blaſii *Amſtel. M. D. & Prof. Ordin. Anatome Animalium, Terreſtrium variorum, Volatilium, Aquatilium, Serpentum, Inſectorum, Ovorumque ſtructuram Naturalem, ex veterum, Recentiorum, Propriiſque obſervationibus Proponens; Figuris variis Illuſtrata.* Amſtelodami 1681. In 4°.

THere is nothing certainly can give us ſo true a knowledge of *Animals*, or be equally conducing towards an accurate *natural Hiſtory* of them, as their *Anatomy*. And as by frequent Diſſections in *Brutes*, we come to diſcover the true make, texture, and uſes of their parts: ſo it leads us the more readily to the knowledge of the ſame in *Humane Bodies*. Many diſcoveries in theſe having been made by *Analogie* from the others, which otherwiſe haply might have lain hid to eternity: wherefore many *induſtrious perſons* of *all* Ages, eſpecially of *this* we live in, have thought the comparative *Anatomy* of *Animals*, a ſubject well worthy their cultivating; ſome having with great labour and diligence delivered to us entire *Treatiſes* of *ſingle Animals*; others, various obſervations of the *parts* in divers; and our *Author* has made a large Collection of *both*. So that here with one view you may ſee the greateſt part of what has hitherto been written of the *Anatomy* of *Animals* by others; all being illuſtrated with a great number of *Figures* in above 60 *Tables* very finely engraved.

The Book is divided into Five parts. The firſt, of *Land-animals*. The 2d, of *Birds*. The 3d, of *Fiſhes*. The 4th, of *Inſects*. The 5th, of *Serpents*. His Method is *Alphabetical*; and often he gives us the *Anatomy* of the ſame *Animal* performed by ſeveral perſons; as alſo ſingle Obſervations

tions of any parts that have occaſionally been deſcribed by others; he epitomizing ſometimes what he conceives too prolix. I ſhall onely give the Names of the *Animals* whoſe *Anatomy* is here delivered.

1. Of Terreſtrial Animals, here is the Anatomy of the *Aſs, Oxe, Bull, Cow, Calf, Camel* or *Dromedory, Dog, Goat, African Goat* or *Elk, Beaver, Deer, Cameleon, Coney, Hedghog, Elephant, Horſe, Mule, Cat, Civet cat, Dormouſe, Hyæna, Porcupine, Lyzard, Lyon, Hare, Wolf, Otter, Martin, Mouſe, Sheep, Hog, Rain-deer, Monkey, Squirrel, Mole, Land-Tortoiſe, Tiger, Viper, Bear, Fox.* Hereto is added Dr. *Slades Sciagraphy* of the *Nutrition of Animals.*

2. Of *Birds*, here is the Anatomy of the *Hawk, Duck, Gooſe, Eagle, Heron, Stork, Pidgeon, Crow, Quail, Cuckow, Swan, Coot, Cock, Hen, Crane, Diver, Grey Owl, Buſtard, Oſprey, Peacock, Pheaſant, Woodpecker, Parrot, Bat, Whooping Owl.* And to this part are added obſervations about *Eggs*, and the formation of Chickens in them, from *Hippocrates Hier. ab aqua pendente, Coieter, Veſlingius, Harvey, Langly, Schrader, Tho. Aldes, Steno, Needum*, and *Malpighius*,

The third contains the Anatomy of *Fiſh* and *Water-Animals*, viz. Of the *Gar fiſh, Sturgeon, Shad, Lobſter, Eel, Cod-fiſh, Whiting, Toad, Carp, Dog-fiſh, Bream*, the *Grey Gurnard, Crocodile*, the *Smooth skin'd Dog-fiſh, Crab, Herring, Hallibut, Lamprey, Jack, Muræna*, the *Globe* or *Scull fiſh, Oyſter, Perch, Seal* or *Sea-calf, Porpuſs, Frog, Thornback, Turbot, Salmon, Salamander, Goldlin, Sea-Turtle* or *Tortoiſe*, the *Spina, Tench, Torpedo, Sword fiſh.*

The fourth of *Inſects*, viz. The *Spider, Silk-worm, Locuſt, Snail, Ephemeron, Caterpiller, Muſtela Foſſilis, Butter flie, Graſhopper, Locuſt, Beetle, Gourd worm.*

The fifth part is of *Serpents.* At the beginning of his Book he gives a Catalogue of the names of the *Authors* who have furniſh'd him with theſe *Accounts*; to which he has added many things of his own. And he does not onely here give us a Collection of a great many curious Obſervations already publiſhed, (though many of them with great difficulty to be procured) but likewiſe of ſome that are

are wholly *new*, which cannot but much gratifie the *Ingenious*, and create in them a juſt eſteem for the *Author* who has taken the pains to make them publick.

From the Journal *des Scavans*, ſet forth *July* 7, 1681.

Traité des Cauſes Naturelles du Flux & du Reflux de la Mer, par Scalberge Miniere. *In* 4°. *à* Chartres, 1681.

THe opinion of *F. Deſchales* is the Onely which this *Author* has not touch'd, amongſt thoſe which he has gathered together in the biginning of this Book, to refute them concerning the Cauſes or Originies of the *Flux* and *Reflux* of the *Sea*; which he attributes to the *Light*, and the *Solar Rays*. After having endeavoured to eſtabliſh his opinion, and touch'd ſome Queſtions; as whence it proceeds that there is no *flux* in the *Caſpian Sea*, &c. he explicates the ordinary or *Quotidian Flux*, the augmentation of that which happens twice a *Moneth*, and of that which comes twice a *Year*, the *Flux* and *Reflux* of the Summer and Winter, *&c.* And he concludes by giving perpetual *Tables* of Marſhes according to the courſe of the Sun; and noting by *Regions*, and by an *Alphabetical order*, the *Coaſts*, *Towns*, and *Sea-ports* where there is a *Flux* and *Reflux*.

From the Journal *Des Scavans*, ſet forth *Dec.* 8. 1681.

A curious Experiment of the Phoſphorus, *made by the Sieur* Baudoüin, *and ſent from* Germany *to the Author of the Journal by the Sieur* Tindequellio.

IT's an Imperial *Eagle* crowned, the Breſt ſhining with a Solar light, armed, or rather holding in his *Talons* a *Scepter* and a *Sword*, the whole incloſed in an Eight-ſquare Chriſtal *Looking glaſs*, adorned with a *Heaven*, ſhining with an infinity of little *Stars* of Gold, towards which the *Eagle* ſeem'd

to

to raiſe it ſelf. All this *Machine* was animated with irradiations like to thoſe of the *Sun*, ſo that the body of the *Eagle* appeared all of flame, when it was put in a dark place. This ſhining, incorruptible, and living *Fire* (though without *heat*, or *ſmoak*, as we have elſewhere deſcribed it in our *Journals*) was entertained, fomented, and ſupplied, but by expoſing it to the *light* of the *day*; its action nevertheleſs having continuance and activity enough to cauſe Pleaſure to the Eye, and Admiration in the Underſtanding, during a conſiderable time, without being obliged to re-animate it by expoſing it a ſecond time to the day.

From the Journal *Des Scavans*, *Dec.* 8. 1681.

A very ſurprizing Problem of Natural Philoſophie, propoſed by Mr. Mariotte.

TO find ſuch an *Object*, which being look'd on through a glaſs *Priſm*, we may ſee *red* towards the *upper-part*, and *blue* towards the *lower-part*; or *blue* towards the *upper-part*, and *red* towards the *lower-part*; or both the two extreams *red*, or both two *blue*; or both the two without *Colours*, without changing the ſcituation of the *Eye*, or of the *Priſm*, or of the *Object*, or without putting any thing betwixt them.

Letters from *Germany* to *France* ſay, that Mr. *Heindreich*, *Library-keeper* to the Marqueſs of *Brandenburgh*, threatens the world always with a terrible *Dictionary*, which will contain no leſs than *a Hundred thouſand Authors*, as he ſays in the *Title* which he has cauſed to be printed.

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